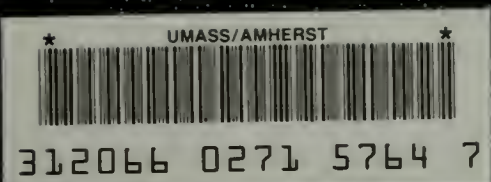


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EA12.1:
981-988



MASS. EA12.1: 984

ANNUAL REPORT

DIVISION OF WATER RESOURCES

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

for the

FISCAL YEAR ENDING-June 30, 1984

GOVERNMENT DOCUMENTS
COLLECTION

APR 27 1987

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INTRODUCTION

Chapter 21, Sections 8 and 9 of the General Laws of the Commonwealth, enacted in 1956, established the existence, the duties and the jurisdiction of the Division of Water Resources under the Water Resources Commission. Chapter 706 of the Acts of 1975 placed the Division within and under the jurisdiction of the Department of Environmental Management as well as the Water Resources Commission. Chapter 589 of 1983, effective on December 18, 1973, completely revised Chapter 21, Sections 8 through 16 placing the Division exclusively under the supervision and control of the Commissioner of the Department and transferred most of the duties formerly assigned to the Water Resources Commission to the Division of Water Resources.

Reorganization of the Water Resources Commission

The law enacted by the legislature in 1983 reorganizing the Water Resources Commission under the Executive Office of Environmental Affairs also transferred the Division of Water Resources from the supervision and control of the Water Resources Commission to that of the Commissioner of the Department of Environmental Management.

With the reorganization, the Division's primary responsibilities of data collection, flood control protection and water resources planning continue in an expanded format with the transfer of certain responsibilities from the Water Resources Commission.

The reorganization transferred to the Division of Water Resources certain administrative responsibilities previously under control of the Water Resources Commission. These responsibilities include the administrative responsibility for the federal Watershed Protection and Flood Prevention Act, the acquisition of lands and waters and easements to protect and conserve water impoundment sites and land adjacent to such sites which it deems necessary to meet the water resources needs of the Commonwealth for flood control, low flow augmentation and municipal water supply and administer the state's contribution to the cooperative survey program of the United States Geological Survey.

Division's New Water Resources Planning Responsibilities

The sections of the Coastal Zone Management Act reorganizing the Water Resources Commission and the Interbasin Transfer Act gave the Water Resources Commission a number of important duties to include coordinating EOEA's water resources planning effort, continuation of the preparation of river basin plans, and reviewing proposed interbasin transfers. In March, 1984, James S. Hoyte, Secretary of the Executive Office of Environmental Affairs and Chairman of the Water Resources Commission, designated the Division of Water Resources to provide the necessary staff support for the Water Resources Commission to administer these Acts.

Division's Main Long Range Goals

- I. Collect, refine and update basic water resources data for dissemination to state, federal and local agencies and the general public.

II. Plan, implement and maintain works of improvement to prevent loss of life and damage to property from erosion, floodwater and sediment in the watersheds of the rivers and streams of the Commonwealth.

III. Facilitate the development of a statewide comprehensive water resources management plan for Massachusetts, formulated from river basin plans being developed from local, regional and state assessments of water needs and resources in conformance with the Massachusetts Water Policy Statement.

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PERSONNEL OF THE DIVISION (as of June 30, 1984)

Kennedy, Charles F.	Director & Chief Engineer
Pyle O. Fletcher	Associate Civil Engineer
Beshara, Michael L.	Associate Civil Engineer
Maguire, Kevin B.	Senior Civil Engineer
Struzziero, Ernest J.	Senior Civil Engineer
Thibedeau, Richard H.	Chief Planner
Phippen, Peter D.	Principal Planner
Bones, William F., Jr.	Principal Planner
Asen, Steve	Resources Planner
Siegfriedt, Faye N.	Resources Planner
Frederiksen, Lynn F.	Resources Planner
Shapiro, Sheldon	Supervising Environmentalist
Brown, David	Senior Marine Fisheries Biologist
McLaughlin, Joan	Senior Planner
Haberlin, Doris	Administrative Assistant
Tanzer, Philip	Senior Statistical Clerk
DiBattista, Cheryl	Senior Clerk Stenographer
Jones, Marcia	Junior Clerk Typist

BASIC DATA

A. Water Resources Data Interchange

One of the most important services of the Division of Water Resources is the dissemination of basic water resources data and other information to professionals, other resource planning agencies and the general public. The Division responds in a timely manner to the continuous requests for information.

B. Basic Data Acquisition

1. Basic Data Gathering includes the recording of precipitation, stream gauging, snow surveys and flood monitoring. This information is necessary for detailed water supply and flood control planning. At the end of September, 1983, state funding through the Department of Public Works for the Cooperative U.S.G.S. Massachusetts groundwater observation well program was discontinued. As emergency action, Division of Water Resources personnel accomplished the measurement of 69 wells across the state from Pittsfield to New Bedford to Salisbury thus preserving the valuable continuity of readings dating back to some wells in 1936. This emergency activity continued through June, 1984 pending the return of funding for this program through the budget process. The Division continues to operate a system of 199 rainfall stations. Statistical records are maintained on general weather conditions such as the rainfall records in the appendix of this report for calendar year 1983. This service is valuable to engineers, students, architects, climatologists and the legal profession. The Division also maintains logs of water wells drilled throughout the state pursuant to the requirements of M.G.L. Chapter 21, Section 16.

2. Water Use Data Program

Efforts during this year focused on improving the Division's computer capabilities and developing a joint program with the U.S. Geological Survey to automate the community basic water resources data. This computer project will transform the community water resources data which is currently stored in file folders into an automated information system. The program will contain twenty-four data points for each water supply system and is designed to be of maximum utility for the river basin planning process and the other planning agencies and individuals which use the data on a regular basis.

C. Regional Resource Evaluations: The following are current studies or programs:

1. Massachusetts River Basin Planning Program (MRBPP)

The final report of The Upper Housatonic River Basin Study was published during this fiscal year. This report is the final river basin study to be completed by the Soil Conservation Service under this cooperative program.

2. Water Resources and Priorities Study

Designed to update information which supports the Early Acquisition of Reservoir Sites Program (Chapter 767, Acts of 1970), this study is evaluating and prioritizing the prime reservoir sites in the State's 27 river basins which were originally identified as part of the Massachusetts Water Resources Study completed in 1978. Using a screening process the sites were reduced to 50±. Field work was completed on these during this fiscal year and work has been focused on the preparation of draft site reports. Assistance was received from The Division of Water Supply (DEQE) to review the appropriateness of the sites used for water supply. The study is 85 percent complete. A Division of Water Resources staff member attended work group meetings, coordinated work tasks and provided water resources data.

3. Section 22 Study (Corps of Engineers)

The Water Resources Commission requested Corps of Engineers expertise under the provisions of Section 22 PL-93-251 to assist the Division of Water Resources to develop a prototype model for preparing a basin water budget using existing water resources data. A draft report "Upper Blackstone River Basin-An Exploratory Water Budget Analysis" was prepared in January, 1984.

4. "Atlas Program" - (Groundwater Studies) and Stream Gaging Program

This cooperative and jointly funded USGS/Water Resources Commission program inventories and assesses the quantity and quality of both ground and surface water resources in selected river basins. The following work tasks were undertaken during the last year:

- a) The final report for the Sudbury/Assabet/Concord River Basins was approved and is ready for publication.
- b) A review of the Chicopee Atlas was completed with the Division working closely with U.S. Geological Survey. Review at U.S.G.S. Headquarters in Reston, Virginia is now underway.
- c) An in-house review of the French-Quinebaug Atlas Report was completed with further review by U.S.G.S Headquarters in progress.
- d) The final report of the Atlas on the Blackstone River Basin was approved and is ready for publication.
- e) Streamflow data was collected for the 78 gaging stations operated in 1984. The 1983 water year surface - water data analysis was completed on 42 of these stations.

5. Chapter 800, Acts of 1979

This cooperative U.S. Geological Survey/Water Resources Commission program is designed to provide baseline data on major aquifers in the Commonwealth. These comprehensive assessments identify areal extent, depth, hydrologic characteristics, the quality and quantity of water, and the effects of water use alternatives. Four studies were in process during FY 1984 under the Chapter 800 Program: the Charles River Basin Study was extended from September, 1984 to May, 1985 to allow for more detailed investigation of groundwater at mid-basin; the Taunton River Basin Study is two-thirds complete; the study to measure groundwater recharge on Cape Cod and the Islands was completed and it has been sent to U.S.G.S. Reston for review; the third year of the four year Plymouth Carver Study was completed; and work on the Nashua, Blackstone and North River Basins was initiated.

6. Early Acquisition of Reservoir Sites Programs

The Division, pursuant to Chapter 21, Section 9A, M.G.L., is authorized by the State Legislature to acquire land, water or easements to protect future water resource values and conserve impoundment sites for the purpose of flood control, low flow augmentation and/or municipal water supply. The Water Resources Commission is currently evaluating a reservoir site acquisition in Middleton. It has directed the Division to pursue negotiations for acquisition of the Rockland site and to evaluate the costs associated with the acquisition of the Kingston site for the City of Brockton.

E. Metropolitan District Commission Long Range Water Supply Study and Environmental Impact Report 2020

This comprehensive study was initiated by the Metropolitan District Commission to evaluate the alternative solutions to meeting the water supply needs of the Metropolitan Boston area. The study encompasses the water use, demand and supply alternatives for the 45 communities presently served by the MDC and for 12 possible future user communities. The demand management alternative has been adopted by the Metropolitan District Commission and the MDC has begun to implement the provisions of this alternative.

The Division of Water Resources participated in this study by:

1. Developing the basic water resources data on local safe yields used in this study.
2. Reviewing drafts of the material produced.
3. Attendance at several public meetings held during the course of the year.

II. FLOOD CONTROL

A. Watershed Protection and Flood Prevention Act (P.L. 566) Program.
(a cooperative program with the U.S. Department of Agriculture)

1. Operational Watersheds

a) Clam River - Berkshire County

All structures are complete except the Clam Lake site, where a solution to an erosion problem with a portion of the embankment is being pursued. Structural corrections have to be made to the riser which controls the water level of the lake.

b) Washington Mountain Brook - Berkshire County

The October Mountain Lake Project is in the final stages of construction.

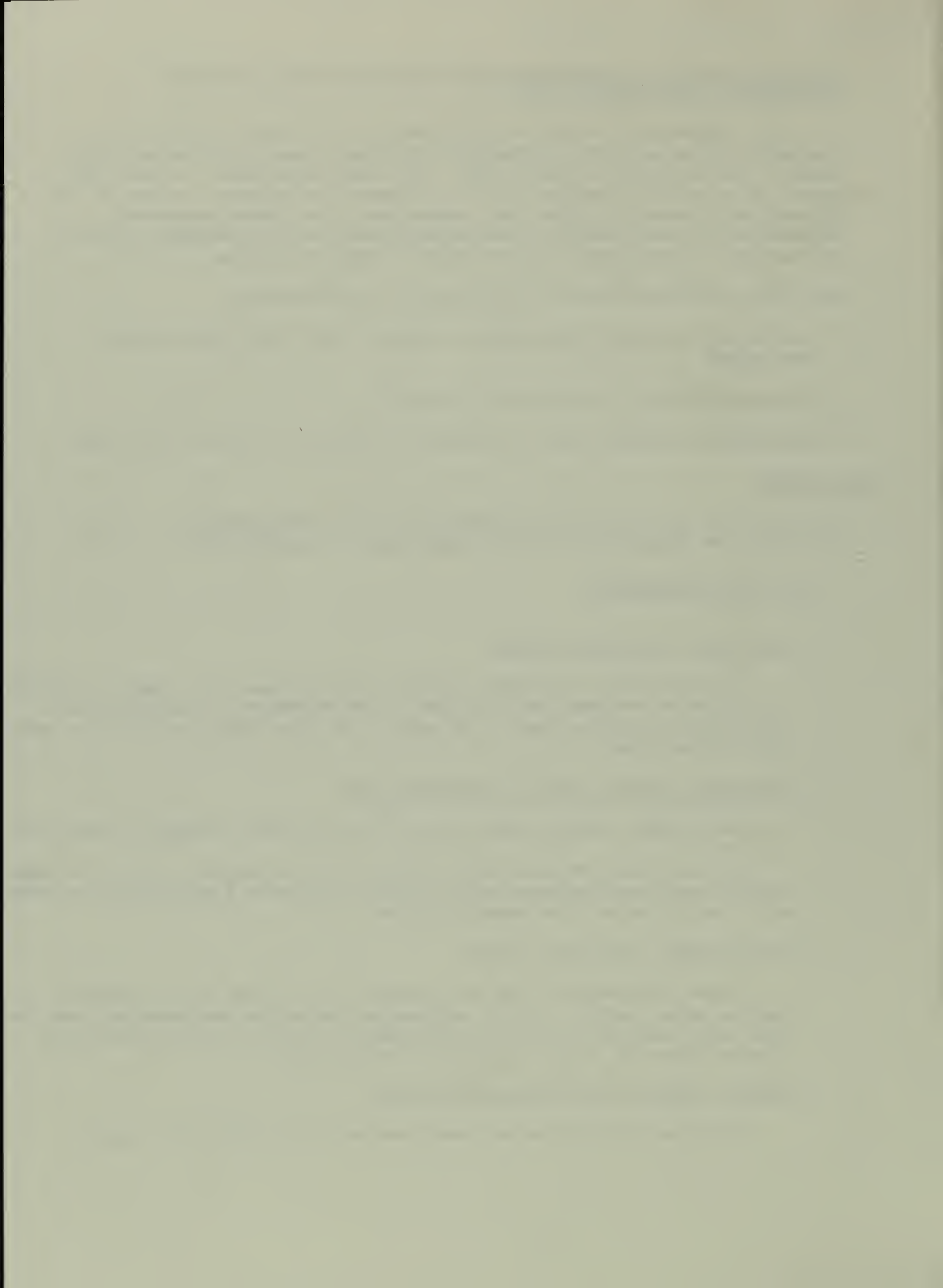
The Washington Mountain Lake investigation is underway. When the samplings have been completed and the results evaluated a decision will be made as to how to correct the seepage problem.

c) Quaboag River - Worcester County

Moose Hill Reservoir has been drained and refilled in an attempt to improve water quality. A full engineering inspection was conducted when the water level was low. This is a requirement of the U.S. Soil Conservation Service after the initial filling of the reservoir.

d) SuAsCo - Middlesex and Worcester Counties

The Brewer Brook Site has been repaired and is operational again.



e) Baiting Brook - Middlesex County

A project agreement has been signed by the Director and Chief Engineer of the Division. The 131-40 order of conditions is being issued by the Framingham Conservation Commission and the Division of Waterways has issued a dam permit.

f) Diamond Brook - Norfolk County

The channel improvement project is underway.

2. Planning Phase

a) Ten Mile River - Bristol and Norfolk Counties

U.S. Soil Conservation Service has terminated planning assistance to this project due to the inability to formulate an acceptable plan.

B. Federal Emergency Management Agency Program

1. National Flood Insurance Program

Of the participating communities in the Commonwealth, 275 are in the Regular Program and 47 in the Emergency Program. Three (3) communities are suspended from the program for their failure to adopt required land use measures.

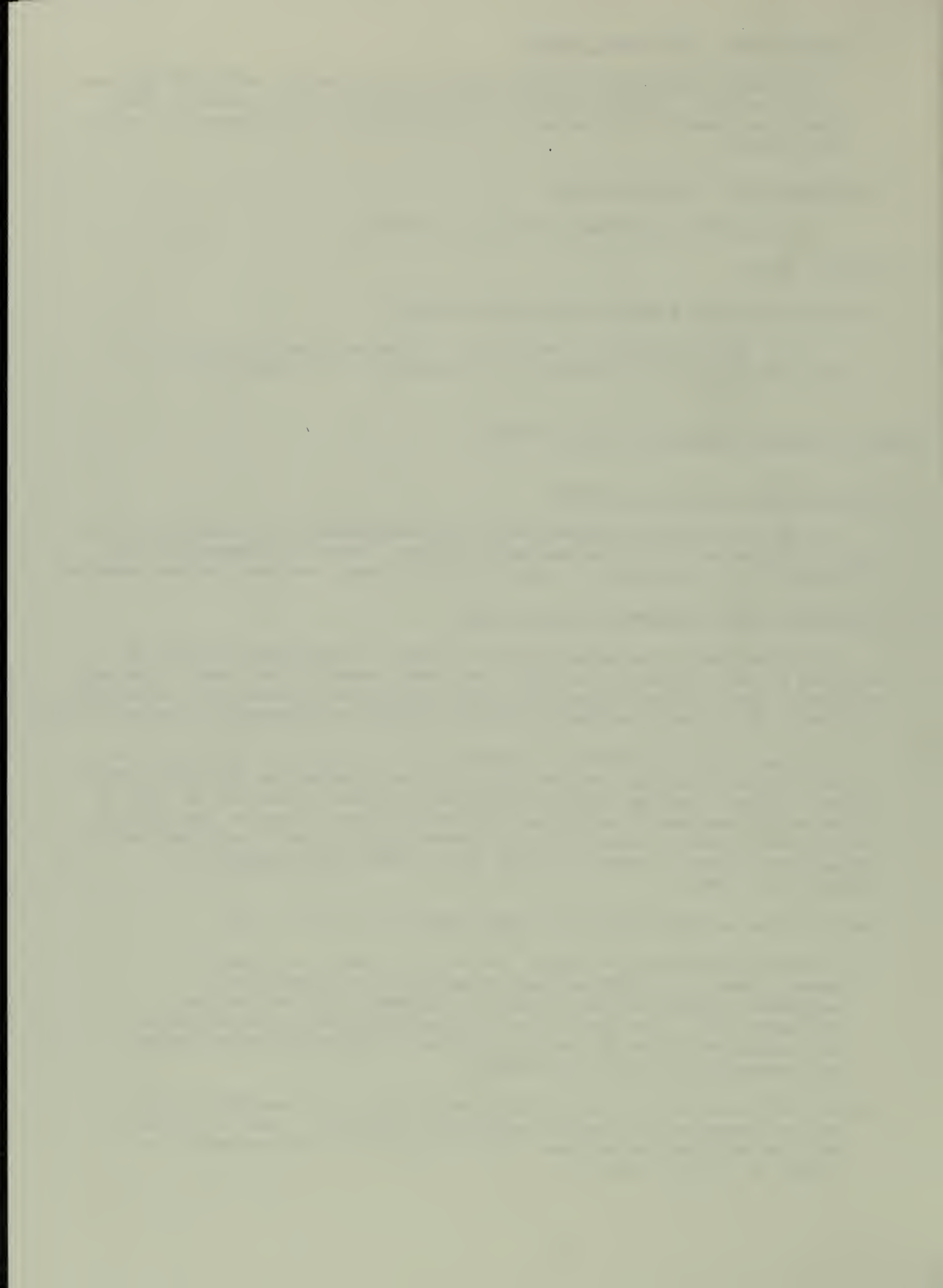
2. The Flood Hazard Management Project (FHMP)

The Flood Hazard Management Project (FHMP) was established within the Division of Water Resources in 1981. The FHMP, funded by the Federal Emergency Management Agency (FEMA) through the State Assistance Program (SAP), continued to promote flood hazard mitigation practices within the Commonwealth during FY 1984.

Funding cuts, coinciding with Federal FY 84, reduced the FHMP staff to two SAP federal positions and one state position provided as the state's share of the funding. Funding cuts have occurred every year since 1981 as part of a FEMA policy designed to encourage individual states to assume the costs of the program, thereby taking over the responsibility of their own flood hazard mitigation problems. Federal funding for the FHMP will terminate on September 30, 1985.

The following accomplishments were made during this fiscal year:

- a) A general assistance and public information element to expand the capabilities of the DEQE Wetlands Program and the Coastal Zone Management Program was discontinued on September 30, 1983 because of funding cuts. The Senior Civil Engineer assigned to the Worcester DEQE office evaluated 87 Notices of Intent in the three months before the termination of the FY 83 contract.
- b) The FHMP screened over 811 projects submitted to A-95 and MEPA review for the presence of floodplain management conflicts. Over 200 projects required detailed evaluations. Only 1 percent of total screened required any further action.



- c) Twenty-two Community Assistance and Program Evaluation meetings were held throughout the State to assist communities in implementing the requirements of the NFIP, Massachusetts Building Code and wetlands protection laws.
- d) The Statewide Clearinghouse for Flood Hazard Information received over 500 requests for information and distributed 3070 pieces of literature.
- e) The Acquisition Program continued in coastal communities and expanded to include inland communities. Assistance was offered to communities that wished to apply for public money for purchasing floodprone areas for the purpose of conservation and recreation. A total of eleven towns have benefitted from this service.
- f) Community assistance was offered to 34 communities that expressed a need for assistance in the FEMA Annual Report for floodplain planning, regulation interpretation, and enforcement procedures of floodproofing. Eleven towns took advantage of the service.

WATER RESOURCES PLANNING

The Water Resources Management Planning Regulations 313 CMR 2.00 were adopted by the Massachusetts Water Resources Commission in 1979 to establish a framework for the development of plans for the river basins of Massachusetts and a state-wide water resource management plan. The basic purpose of these regulations is to facilitate the development of comprehensive water resources management plans for Massachusetts. These plans are being based on local, regional and state assessments of water needs and resources to be in conformance with the Massachusetts Water Supply Policy Statement and to be developed from adequate data aggregated by river basins.

A. Organization

The core positions for this planning effort were transferred to State funding beginning with the FY 1984 budget and thus enabling the State's long range water resources planning program to continue.

B. Coordination

The development of a river basin plan involves five steps: 1) inventory the basin's water resources, demand and uses, 2) analyze data and identify projected water needs, 3) develop alternatives, 4) prepare water resources management plan, and 5) adopt the plan.

The inventory stage is being carried out in a layer approach with each inventory component being collected simultaneously for all the river basins in the State. This allows statewide assessments to be prepared as each inventory component is developed and baseline data base to be established ensuring consistency of information among a wide variety of programs and projects at the local, regional and state level.

Planning efforts during this fiscal year focused on making significant progress in stage 1 the inventory of 27 river basins' water resources, demand and uses and initiating work on stage 2 of the planning process.

C. Accomplishments during the reporting period included:

1. Community Water Resources Data

The Division continued its ongoing responsibility of updating and analyzing the community water resources data. This detailed information is being used as the foundation for developing the 27 river basin plans, to help target many of the State's water resources local grant programs and to prepare long range water demand projections.

2. Disaggregate Data by River Basins

The basic water resource data was assembled by basin and the following reports were produced:

- a) "A Guide to Public Lakes, Ponds and Reservoirs of Massachusetts".
- b) "Directory of State and Regional Water Planning and Management Agencies", updated March 1984.
- c) "Massachusetts Public Water Supply 1980 Service Population", April 1984.

3. Blackstone River Basin

The basic community water resources data was aggregated for the Blackstone River Basin and developed into the report; "Blackstone River Basin Inventory and Analysis of Current and Projected Water Use". This planning effort included the preparation of a computer water demand projection model.

4. Ipswich River Basin

Work began on reactivating and updating the hydrologic simulation computer model for the Ipswich River. This effort included field visits to the local water supply agencies to refine data on water supply sources, initial preparation of an inventory and analysis of current and projected water use in the Ipswich Study Area and updating the water resources data in the computer model.

5. Self-Supplied Water Use

The planning staff developed draft methodologies for estimating rural domestic, industrial, commercial and agricultural water use.

D. Water Resources Planning Task Force

The Water Resources Commission established a Water Resources Planning Functions Task Force to assist the Commission to coordinate water resources planning among the agencies and departments in the Executive Office of Environmental Affairs. The task force is to be the primary mechanism to implement Chapter 21A, Section 8B (b) which establishes the planning coordinating function of the Commission as reorganized by the Acts of 1983. The task force is also serving as an advisory committee to the Commission to assist it in developing regulations and criteria to implement the new Interbasin Transfer Act.

The task force is co-chaired by the Executive Director of the Water Resources Commission and the Division's Chief Planner.

The task force consists of as core members, a representative of the principal state water planning and management agencies, and as contributing agencies and associations, representatives of other organizations involved in water resources planning issues in Massachusetts.

E. Water Policy Review Task Force

In 1983, the Water Resources Commission established an in-house Task Force to review and update these policies. The Task Force considered current state agency operational water supply procedures, new information on water supply issues, and practical experiences of local and state governments.

A draft update was developed by the Task Force and approved in concept, by the Water Resources Commission in January, 1984. Agency and public review of the draft occurred during the spring with final adoption by the Commission expected in the Summer of 1984.

The Massachusetts Water Supply Policy Statement-1984 Update consists of an overview, supply management policies, demand management policies, administrative management policies and a conclusion. The supply management policies preserve primary responsibility at the local level while recognizing that state laws, policies and programs will exercise a strong influence on local plans. The demand management policies provide for a statewide demand management program to increase public sensitivity to the importance of water while at the same time encouraging supplier and user efficiencies. The administrative management policies provide that state administrative responsibilities for water supply should be centralized with the Executive Office of Environmental Affairs' Water Resources Commission responsible for coordinating and developing statewide water supply planning and policy issues.

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IN THE DEPARTMENT OF THE HISTORY OF ARTS AND ARCHITECTURE

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MASSACHUSETTS PRECIPITATION 1983
(inches)

	State	Northeast Section	Southeast Section	Central Section	Conn. River Section	Western Section
January	4.69	4.74	3.94	5.02	5.26	4.11
February	4.41	4.13	5.10	4.43	4.04	3.35
March	7.76	9.05	9.07	8.22	7.46	5.33
April	8.13	6.42	8.83	7.85	9.64	9.30
May	4.50	3.84	3.51	5.02	6.14	5.58
June	2.98	1.79	2.79	2.55	3.38	4.14
July	1.97	1.40	1.98	1.80	2.91	2.42
August	3.62	3.83	4.44	4.20	3.66	4.16
September	1.57	1.20	2.03	1.54	1.88	1.97
October	4.06	3.64	5.04	4.82	4.41	3.05
November	8.07	9.43	8.57	8.74	7.29	5.65
December	5.92	6.27	5.09	6.23	6.77	6.09
Year	57.68	55.74	60.39	60.42	62.84	55.15
Normal	44.29	42.51	44.61	44.68	44.77	44.92

MASSACHUSETTS PRECIPITATION 1983
DEVIATION FROM NORMAL
(Inches)

	State	Northeast Section	Southeast Section	Central Section	Conn. River Section	Western Section
January	+0.97	+1.07	-0.05	+1.21	+1.85	+0.88
February	+1.09	+0.75	+1.48	+0.94	+0.87	+0.41
March	+3.91	+5.30	+4.94	+4.20	+3.85	+1.97
April	+4.48	+2.85	+4.88	+4.13	+6.02	+5.60
May	+0.92	-0.53	+0.11	+1.55	+2.17	+1.67
June	-0.60	-1.60	-0.54	-1.17	-0.61	-0.06
July	-1.69	-2.07	-0.98	-1.73	-1.22	-1.95
August	-0.34	+0.22	+0.39	+0.51	-0.40	-0.13
September	-2.05	-2.33	-1.65	-2.36	-1.89	-2.18
October	+0.51	+0.34	+1.46	+1.44	+0.92	-0.38
November	+4.11	+5.56	+4.78	+4.71	+3.38	+1.88
December	+2.08	+2.61	+0.96	+2.31	+3.13	+2.52
Total Excess or Deficiency for Year 1983	+13.39	+13.23	+15.78	+15.74	+18.07	+10.23

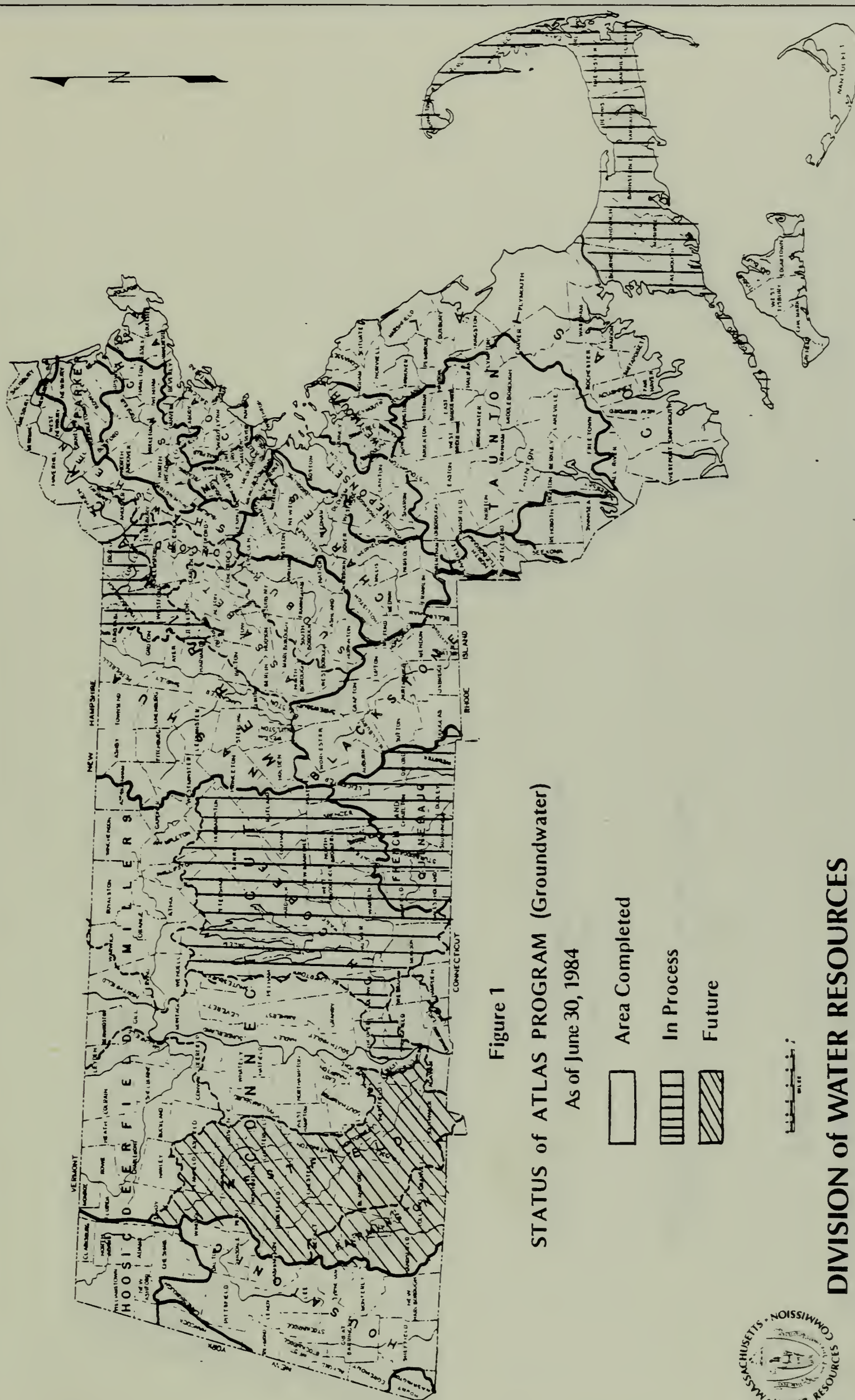
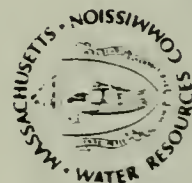


Figure 1
STATUS of ATLAS PROGRAM (Groundwater)
As of June 30, 1984

- Area Completed
- In Process
- Future



DIVISION of WATER RESOURCES



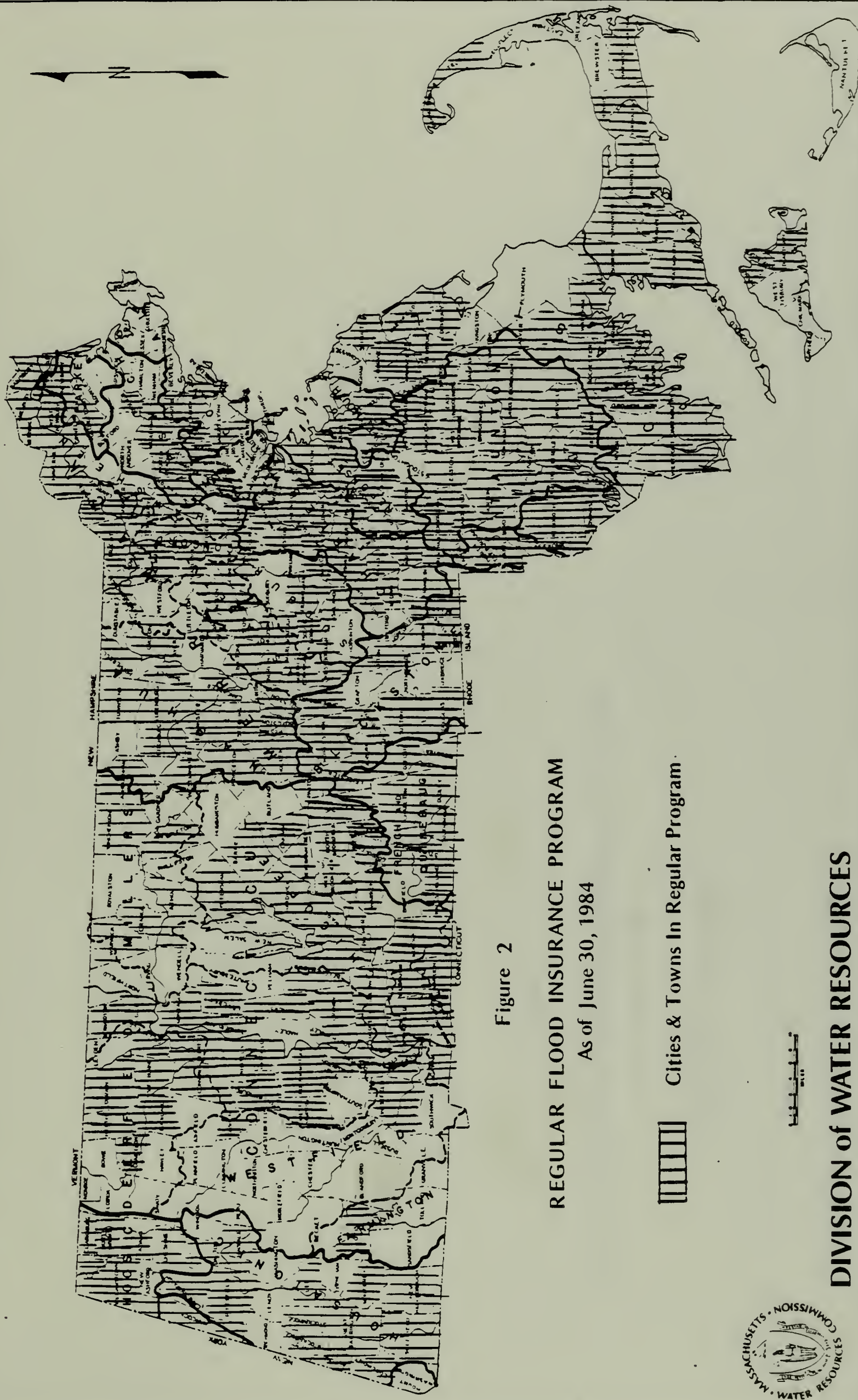
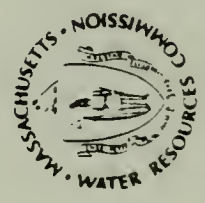


Figure 2
 REGULAR FLOOD INSURANCE PROGRAM
 As of June 30, 1984
 Cities & Towns In Regular Program



DIVISION of WATER RESOURCES

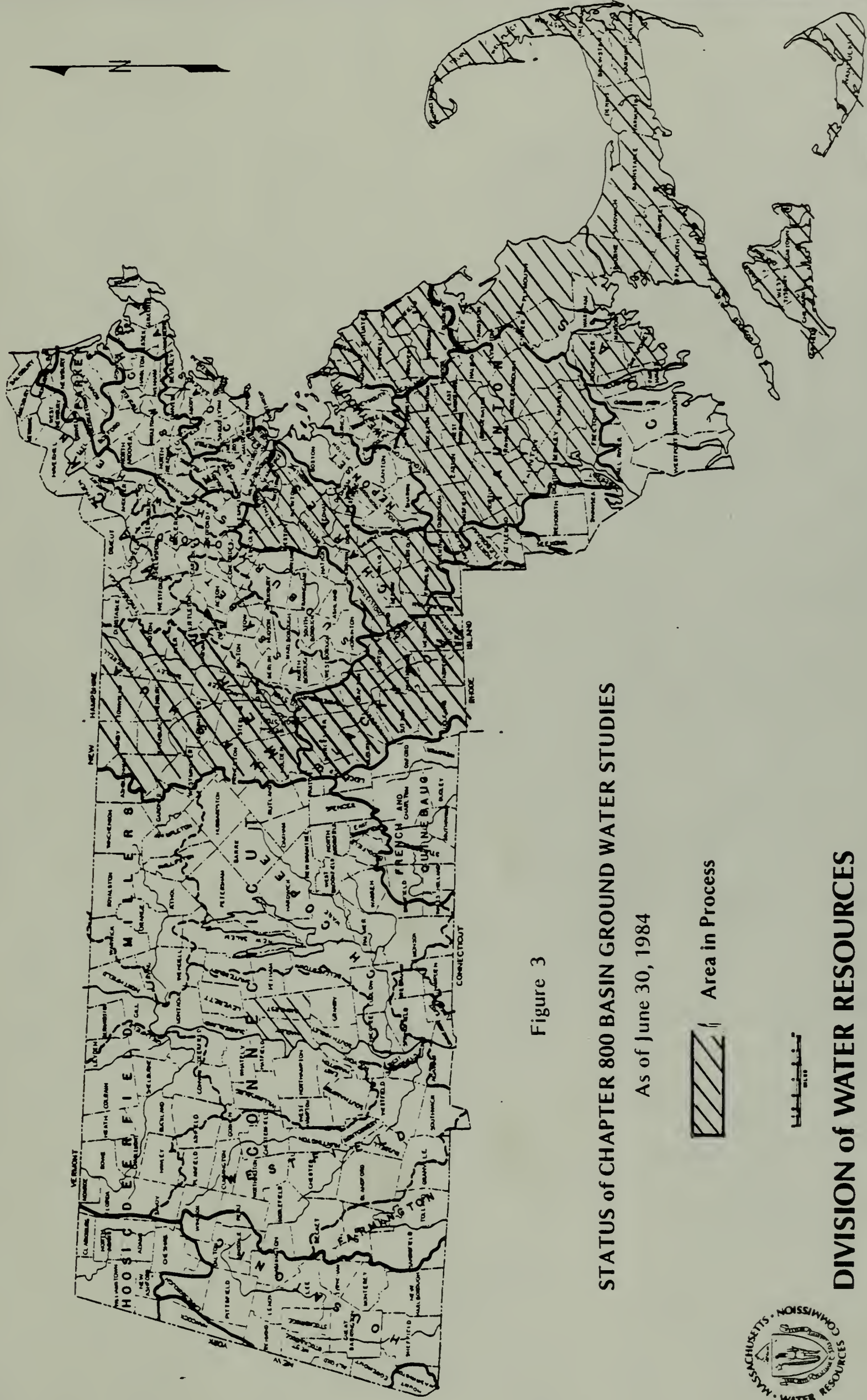

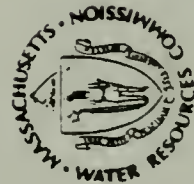


Figure 3

STATUS of CHAPTER 800 BASIN GROUND WATER STUDIES

As of June 30, 1984

 Area in Process



DIVISION of WATER RESOURCES

